



Rec'd PCT/PTO 31 JAN 2005



**Moisture indicator label**

**Patent number:** EP1001264  
**Publication date:** 2000-05-17  
**Inventor:** YAMAMOTO KOICHI (JP); KITAMURA TOSHIYASU (JP)  
**Applicant:** MATSUSHITA ELECTRIC IND CO LTD (JP)  
**Classification:**  
- **international:** G01N31/22; G01D3/08  
- **europaean:** G01D3/08, G01N31/22C  
**Application number:** EP19990122501 19991111  
**Priority number(s):** JP19980322148 19981112

**Also published as:**

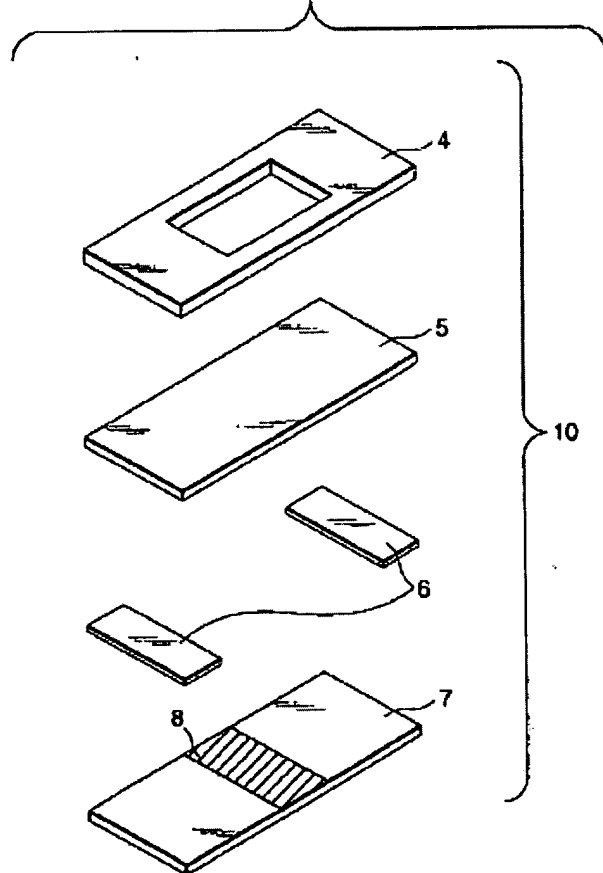
 US6628785 (B1)  
 JP2000151776 (A)

**Cited documents:**

 WO9823920  
 US5224373

**Abstract of EP1001264**

A moisture indicating label enabling judgement on whether or not a portable terminal device or the like has been immersed in water. The moisture indicating label includes a lower case provided with a hole, a double side coated adhesive member for bonding both sides, surrounding the hole, a transparent sheet for blocking entrance of water from the hole and allowing the state change of a moisture indicating label seen through from the surface thereof, and the moisture indicating label including a double side coated adhesive member disposed at both ends of the transparent sheet and a white plain paper, and the white plain paper applied with red color printing with a water-color ink at the center. The hole is formed at a position not to be covered by another part mounted on the lower case, for example, above a holding member.

**FIG.4**

Data supplied from the esp@cenet database - Worldwide

**BEST AVAILABLE COPY**



(11) **EP 1 001 264 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**17.05.2000 Bulletin 2000/20**

(51) Int Cl.7: **G01N 31/22, G01D 3/08**

(21) Application number: **99122501.2**

(22) Date of filing: **11.11.1999**

(84) Designated Contracting States:  
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU**  
**MC NL PT SE**  
 Designated Extension States:  
**AL LT LV MK RO SI**

(72) Inventors:  
 • Kitamura, Toshlyasu  
 Yokohama-shi, Kanagawa (JP)  
 • Yamamoto, Koichi  
 Yokohama-shi, Kanagawa (JP)

(30) Priority: **12.11.1998 JP 32214898**

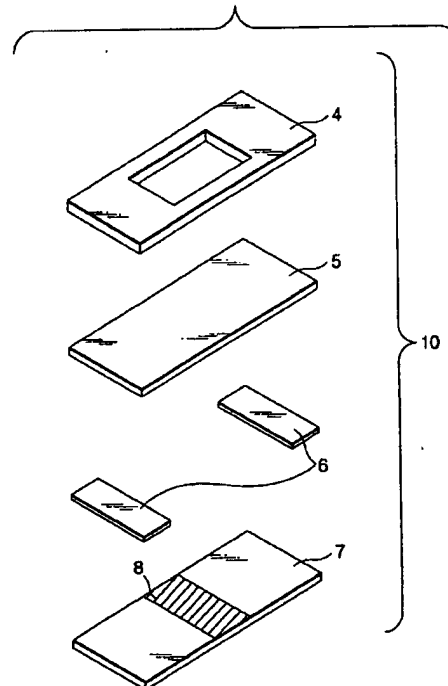
(74) Representative: **Grünecker, Kinkeldey,**  
**Stockmalr & Schwanhäusser Anwaltssozietät**  
**Maximilianstrasse 58**  
**80538 München (DE)**

(71) Applicant: **MATSUSHITA ELECTRIC INDUSTRIAL**  
**CO., LTD**  
**Kadoma-shi, Osaka 571-0000 (JP)**

(54) **Moisture indicator label**

(57) A moisture indicating label enabling judgement on whether or not a portable terminal device or the like has been immersed in water. The moisture indicating label includes a lower case provided with a hole, a double side coated adhesive member for bonding both sides, surrounding the hole, a transparent sheet for blocking entrance of water from the hole and allowing the state change of a moisture indicating label seen through from the surface thereof, and the moisture indicating label including a double side coated adhesive member disposed at both ends of the transparent sheet and a white plain paper, and the white plain paper applied with red color printing with a water-color ink at the center. The hole is formed at a position not to be covered by another part mounted on the lower case, for example, above a holding member.

**FIG.4**



**EP 1 001 264 A1**

## Description

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

[0001] The present invention relates to a water sinking confirmation device and in particular, it relates to one to be used in a portable terminal device or the like, enabling judgment on whether or not the device has been sunk in water only by seeing a lower case.

#### 2. Description of the Related Art

[0002] Conventionally, as a water sinking confirmation device to be used in a portable terminal device such as a portable phone device or a PHS, one shown in FIG. 6 has been known. In FIG. 6, the water sinking confirmation device comprises an internal unit 61 with a water sinking confirmation seal 62 attached at a predetermined position, and a lower case 63 having a hole 64 formed at a predetermined position such that the water sinking confirmation seal 62 attached on the internal unit 61 is seen through a transparent sheet 65, attached together.

[0003] However, since other parts of the portable terminal device are mounted on the hole 64 provided in the lower case 63 in the conventional water sinking confirmation device, it involves a problem in that the water sinking state of the water sinking confirmation seal 62 attached on the internal unit 61 cannot be seen directly through the hole 64 formed in the lower case 63.

[0004] Moreover, since the water sinking confirmation seal 62 is attached directly on a predetermined position of the internal unit 61 and the transparent sheet 65 is bonded or adhered to the lower case 63, surrounding the hole 64, the water sinking confirmation seal 62 and the transparent sheet 65 are not sealed closely, and thus a problem is involved in that the water sinking confirmation seal 62 may generate the state change when it is not sunk in water.

### SUMMARY OF THE INVENTION

[0005] In order to solve the above problems, an object of the invention is to provide a water sinking confirmation device enabling judgment on whether or not a portable terminal device or the like has been sunk in water only by seeing a lower case.

[0006] In order to achieve the above object, according to the invention, there is provided a water sinking confirmation device comprising: a lower case provided with a hole for confirming water sinking; a double side coated adhesive member for bonding both sides, surrounding the hole; a transparent sheet allowing a state change of a water sinking confirmation seal seen through from a surface thereof; and the water sinking confirmation seal including a double side coated adhesive member dis-

posed at both ends of the transparent sheet and a white plain paper, and the white plain paper applied with red color printing with a water-color ink at a center thereof.

#### 5 BRIEF DESCRIPTION OF THE DRAWINGS

[0007] FIG. 1 is a cross-sectional view showing the configuration of a water sinking confirmation device according to an embodiment of the invention.

10 [0008] FIG. 2 is a plan view of a water sinking confirmation seal according to the embodiment of the invention.

15 [0009] FIG. 3 is a cross-sectional view showing the configuration of the water sinking confirmation device according to the embodiment of the invention used in a portable terminal device.

20 [0010] FIG. 4 is an exploded perspective view showing the order of assembling the water sinking confirmation device according to the embodiment of the invention.

[0011] FIG. 5 is a perspective view for explaining the configuration of the invention, corresponding to a conventional configuration.

25 [0012] FIG. 6 is a perspective view showing the configuration of the conventional water sinking confirmation device.

### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

30 [0013] Hereinafter, an embodiment of the invention will be described with reference to the accompanying drawings.

35 [0014] FIG. 1 is a cross-sectional view showing the configuration of a water sinking confirmation device according to the invention to be used in a portable terminal device, such as a portable phone device or a PHS. In FIG. 1, the water sinking confirmation device comprises a lower case 2 provided with a hole 3, a double side coated adhesive member 4 for bonding both sides, surrounding the hole 3, a transparent sheet 5 for blocking entrance of water from the hole 3 and allowing the state change of a water sinking confirmation seal 10 seen through from the surface thereof, and the water sinking confirmation seal 10 including a double side coated adhesive member 6 disposed at both ends of the transparent sheet 5 and a white plain paper 7, and the white plain paper 7 applied with red color printing 8 with a water-color ink at the center. The hole 3 is formed at a position not to be covered by another part mounted on the lower case 2, for example, above a holding member 1.

50 [0015] FIG. 2 is a plan view of the water sinking confirmation seal 10, showing the state comprising the double side coated adhesive member 6 disposed below the transparent sheet 5, capable of bonding both sides at both end portions of the transparent sheet 5, and being applied with red color printing 8 with a water-color ink at the center. Moreover, as shown in the cross-sectional

view of FIG. 1, since the double side coated adhesive member 6 is provided between the white plain paper 7 and the transparent sheet 5 so as to form a gap 9, consequently water can enter from the gap 9.

[0016] FIG. 3 is a cross-sectional view of the configuration of the water sinking confirmation device used in a portable terminal device, such as a portable phone device. In FIG. 3, since the water sinking confirmation device is provided in the lower case 2 on the holding member (external connector) 1 attached on the lower part of the portable phone device, whether or not the portable terminal device, such as the portable phone device has been sunk in water can be judged only by exposing the lower case 2. Further, the water sinking confirmation seal 10 is attached to the lower case 2 at a position below a soldering portion 12 of the holding member 1 with the main body positioned upright.

[0017] FIG. 4 is an exploded perspective view showing the order of assembling the water sinking confirmation seal. In FIG. 4, the double side coated adhesive member 6 is placed and bonded on both ends of the white plain paper 7 applied with red color printing 8 with a water-color ink at the center. The transparent sheet 5 is placed and bonded on the double side coated adhesive member 6. Furthermore, the double side coated adhesive member 4 provided with a hole at the center is placed and bonded on the transparent sheet 5. The configuration shown in FIGS. 1 and 3 can be provided by bonding the water sinking confirmation seal thus assembled with the hole of the double side coated adhesive member 4 placed around the hole 3 of the lower case 2.

[0018] Therefore, since the hole 3 of the lower case 2 is surrounded by the double side coated adhesive member 4 and the transparent sheet 5 and thus water entering from the hole 3 of the lower case 2 can be blocked, the state of the water sinking confirmation seal 10 cannot be changed merely by moisture. Further, the water sinking confirmation seal 10 cannot be peeled off even if it is forced in from the hole 3 by mischief or the like.

[0019] FIG. 5 is a view for explaining the configuration of the invention, corresponding to the conventional configuration shown in FIG. 6. In FIG. 5, the water sinking confirmation device can be placed on the holding member 1 mounted on a predetermined position of the printed board 11 when the water sinking confirmation seal 10 is put on the lower case 2 at the hole 3 thereof from below.

[0020] As apparent from the above description, since the invention comprises a lower case provided with a hole for confirming water sinking, a double side coated adhesive member for bonding both sides, surrounding the hole, a transparent sheet allowing the state change of a water sinking confirmation seal later described seen through from the surface thereof, and the water sinking confirmation seal including a double side coated adhesive member disposed at both ends of the transparent sheet and a white plain paper later described, and the

white plain paper applied with red color printing with a water-color ink at the center, the effect of enabling judgment on whether or not a portable terminal device or the like has been sunk in water only by seeing the lower case can be achieved.

#### Claims

1. A water sinking confirmation device comprising:
  - a lower case provided with a hole for confirming water sinking;
  - a double side coated adhesive member for bonding both sides, surrounding the hole;
  - a transparent sheet allowing a state change of a water sinking confirmation seal seen through from a surface thereof; and
  - the water sinking confirmation seal including a double side coated adhesive member disposed at both ends of the transparent sheet and a white plain paper, and the white plain paper applied with red color printing with a water-color ink at a center thereof.
2. The water sinking confirmation device according to claim 1, wherein the hole is formed at a position not to be covered by another part mounted on the lower case.
3. The water sinking confirmation device according to claim 1, wherein the transparent sheet blocks entrance of water from the hole according to the bond with the double side coated adhesive material for bonding both sides, surrounding the hole without the risk of peel-off even if it is forced in.
4. The water sinking confirmation device according to claim 1, wherein the water sinking confirmation seal is provided with a slight gap with respect to a holding member on a printed board.
5. The water sinking confirmation device according to claim 4, wherein the gap between the water sinking confirmation seal and the holding member on the printed board is narrower than a thickness of the water sinking confirmation seal.
6. The water sinking confirmation device according to claim 1, wherein the holding member serves also as a housing of an external connector.
7. The water sinking confirmation device according to claim 6, wherein the water sinking confirmation seal is attached to the lower case at a position below a soldering portion of the external connector with a main body positioned upright.

8. A portable terminal device comprising the water sinking confirmation device according to claim 1.
9. A portable phone device comprising the water sinking confirmation device according to claim 1.

5

10

15

20

25

30

35

40

45

50

55

FIG.1

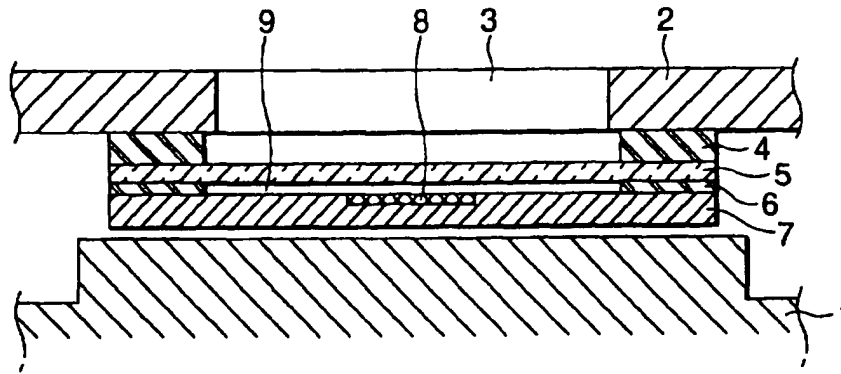


FIG.2

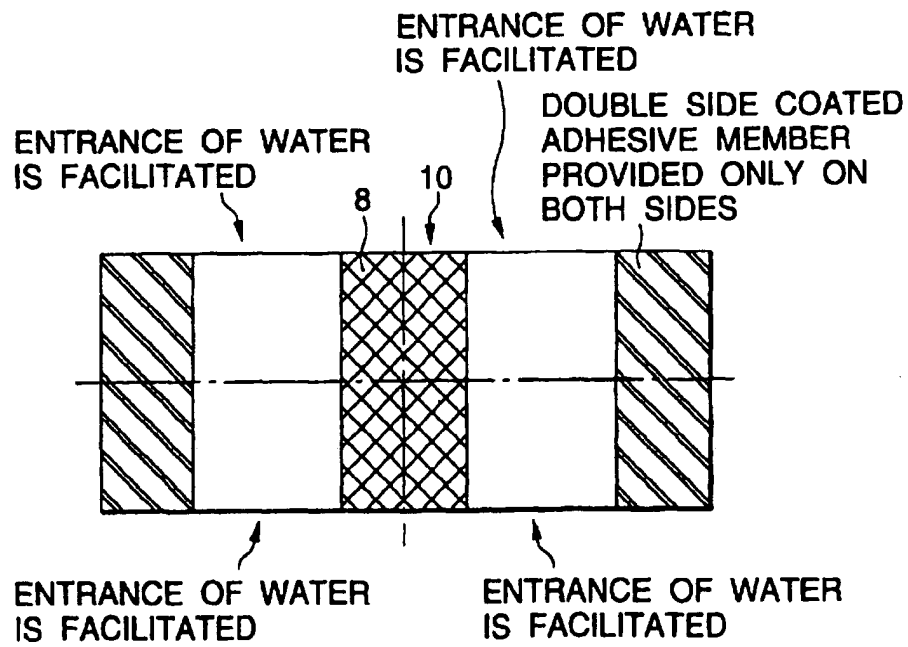


FIG.3

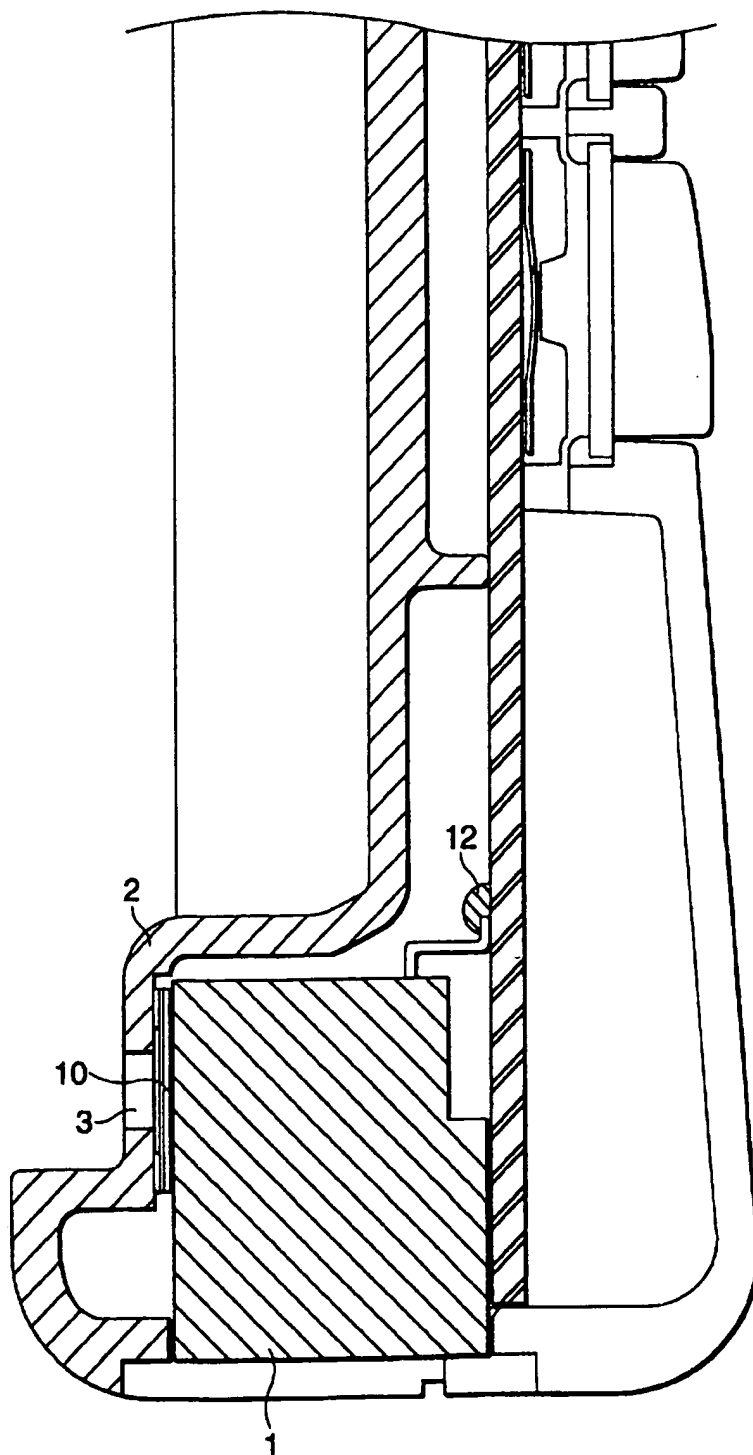


FIG.4

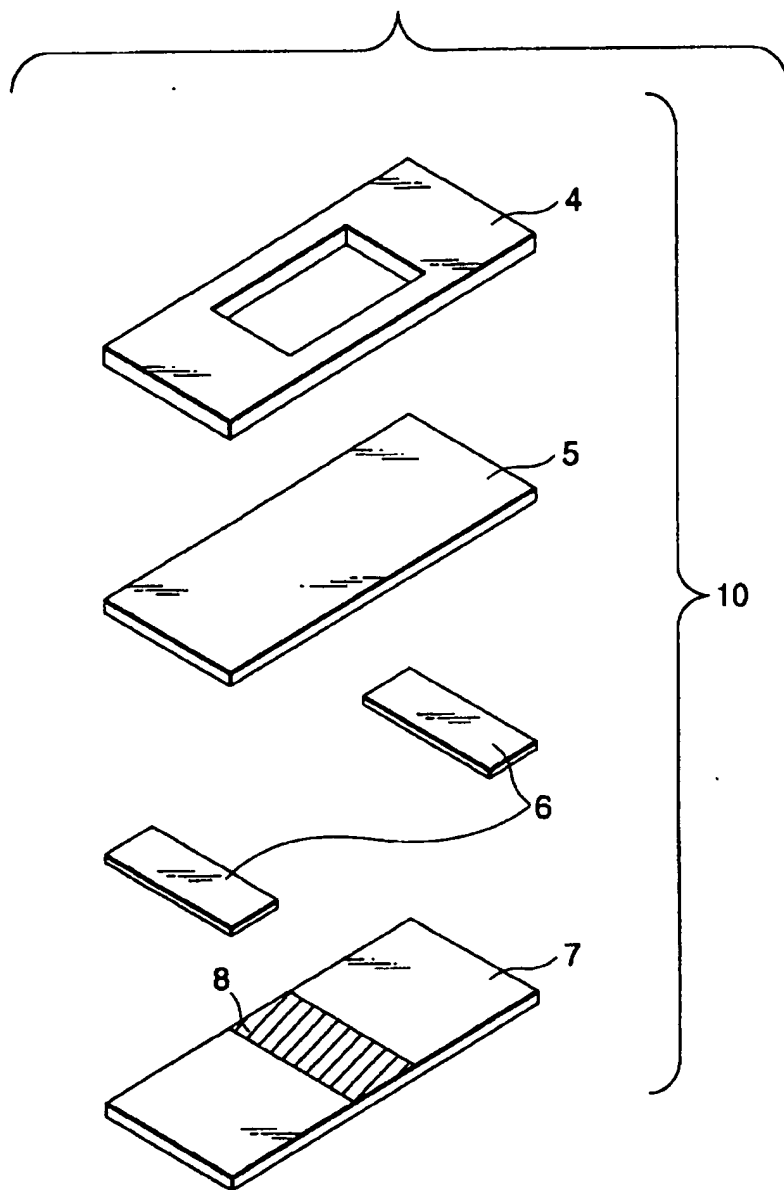




FIG.5

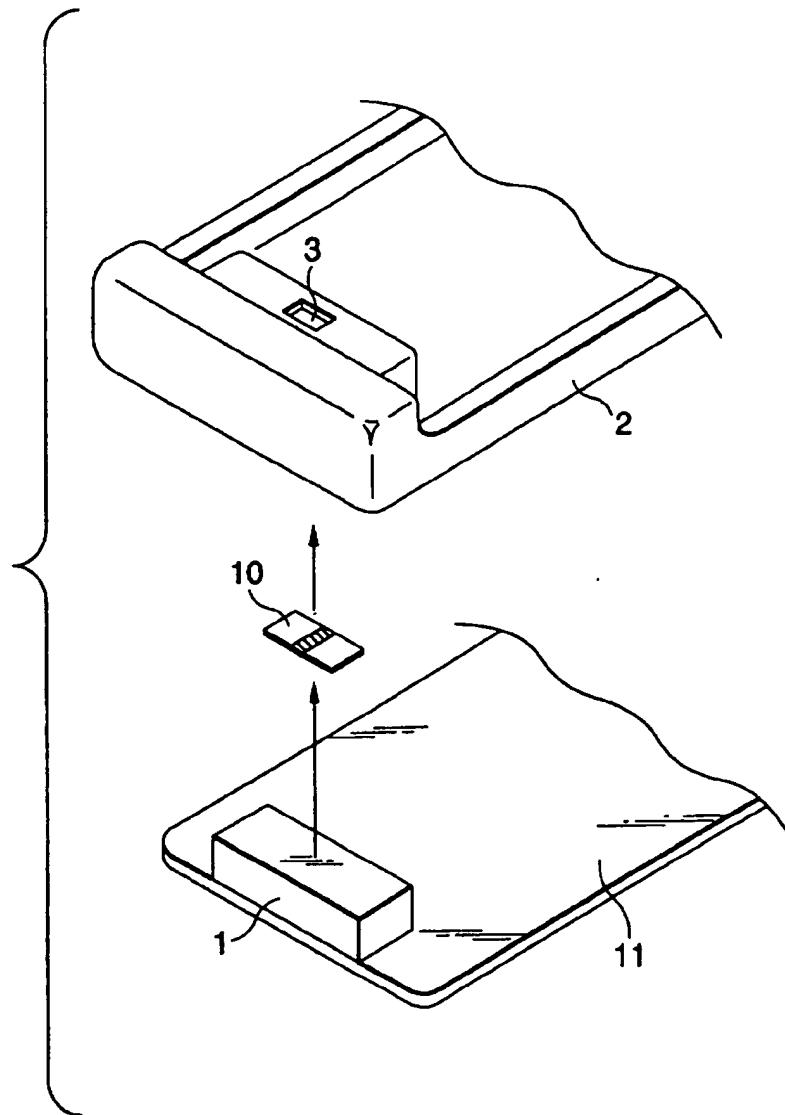
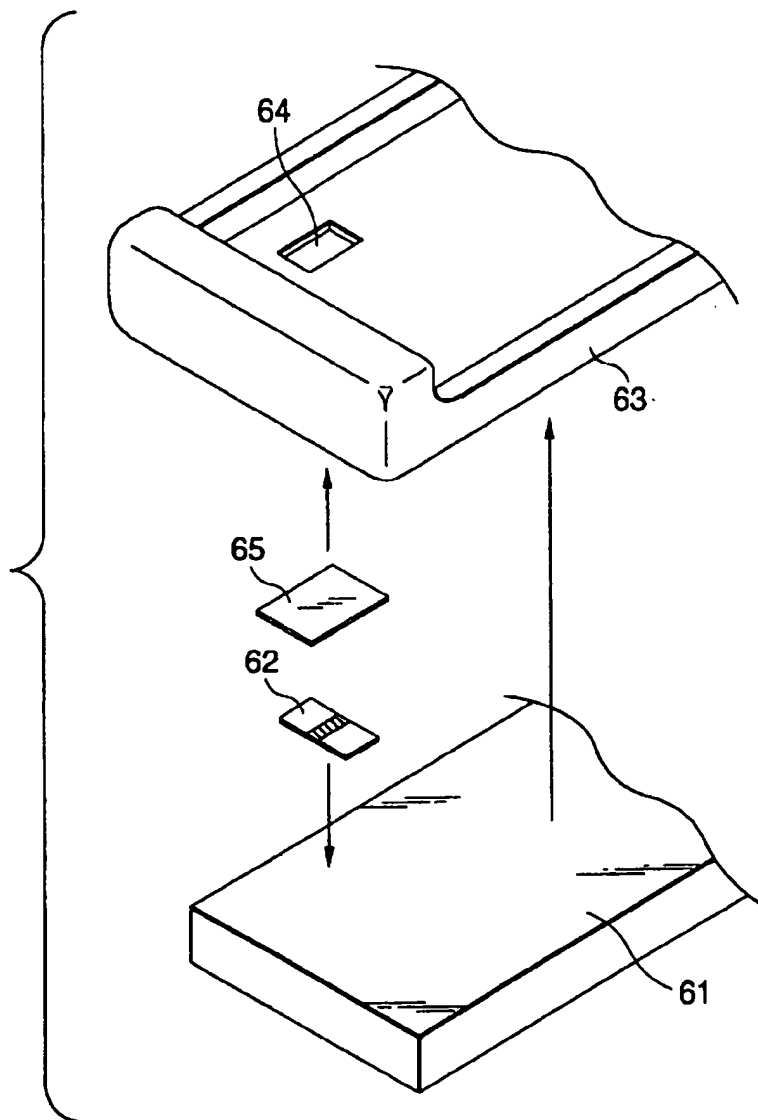


FIG.6





European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 99 12 2501

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Y	WO 98 23920 A (ERICSSON GE MOBILE INC) 4 June 1998 (1998-06-04) * page 2, line 20 - line 35 * * page 3, line 18 - column 6, line 9; figures 1-3 *	1-3,8,9	601N31/22 601D3/08
Y	US 5 224 373 A (WILLIAMS CHRISTI A ET AL) 6 July 1993 (1993-07-06) * column 4, line 45 - column 6, line 41; figures 1-4 *	1-3,8,9	
Y	TOPPAN PRINTING CO LTD: "WPI WORLD PATENT INFORMATION DERWENT,GB,DERWENT" , WPI WORLD PATENT INFORMATION DERWENT,GB,DERWENT, VOL. 40, NR. 94 XP002057944 * the whole document *	8	
A		1,9	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			601N 601D
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>10 February 2000</b>	Examiner <b>Chapple, I</b>
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

EPO FORM 1502 (01/02) (PUBLISHED)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 99 12 2501

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

10-02-2000

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
W0 9823920	A	04-06-1998	AU	7411298 A	22-06-1998
US 5224373	A	06-07-1993	NONE		

EPO FORM P4589

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**